

In the Claims

Please cancel claims 1-9.

Please add the following claims:

- - 12. A monolithic optical device having a multilayer three-dimensional pattern, comprising:

a substrate having a top surface;

a first layer of photosensitive material on said top surface of said substrate, said first layer being exposed to define an arbitrary first layer pattern;

a second layer of photosensitive material on a top surface of said first layer, said second layer being exposed to define an arbitrary second layer pattern; and

a barrier layer between said first and second layers, said layers being developed to form a three-dimensional structure having an arbitrary pattern.

- - 13. The optical device of claim 12, further including multiple additional layers of photosensitive material, each on a top surface of a preceding layer, each additional layer being individually exposed to define corresponding patterns on corresponding layers.

- - 14. The optical device of claim 13, further including barrier layers between adjacent photosensitive material layers.

- - 15. The topical device of claim 14, wherein the patterns of said layers are vertically aligned on said substrate.

- - 16. The optical device of claim 15, wherein said photosensitive material is a positive photoresist material.

- - 17. The optical device of claim 15, wherein said photoresist material is a negative photoresist material.

- - 18. The optical device of claim 15, wherein the photosensitive material of at least one of said layers is a first photoresist material and the photoresist material of the remaining said layers is a second photoresist material.

- - 19. The optical device of claim 12, wherein each of said layers is a lithographically definable layer.

- - 20. The optical device of claim 12, wherein said layers are shaped to form an optical coupler.

- - 21. The optical device of claim 12, wherein each of said layers is of a different shape.

- - 22. The optical device of claim 12, wherein each of said layers is optically transparent.

- - 23. The optical device of claim 12, wherein said layers are configured as an optical grating.

- - 24. The optical device of claim 12, wherein said substrate is an optical chip carrying monolithic optical components. - -